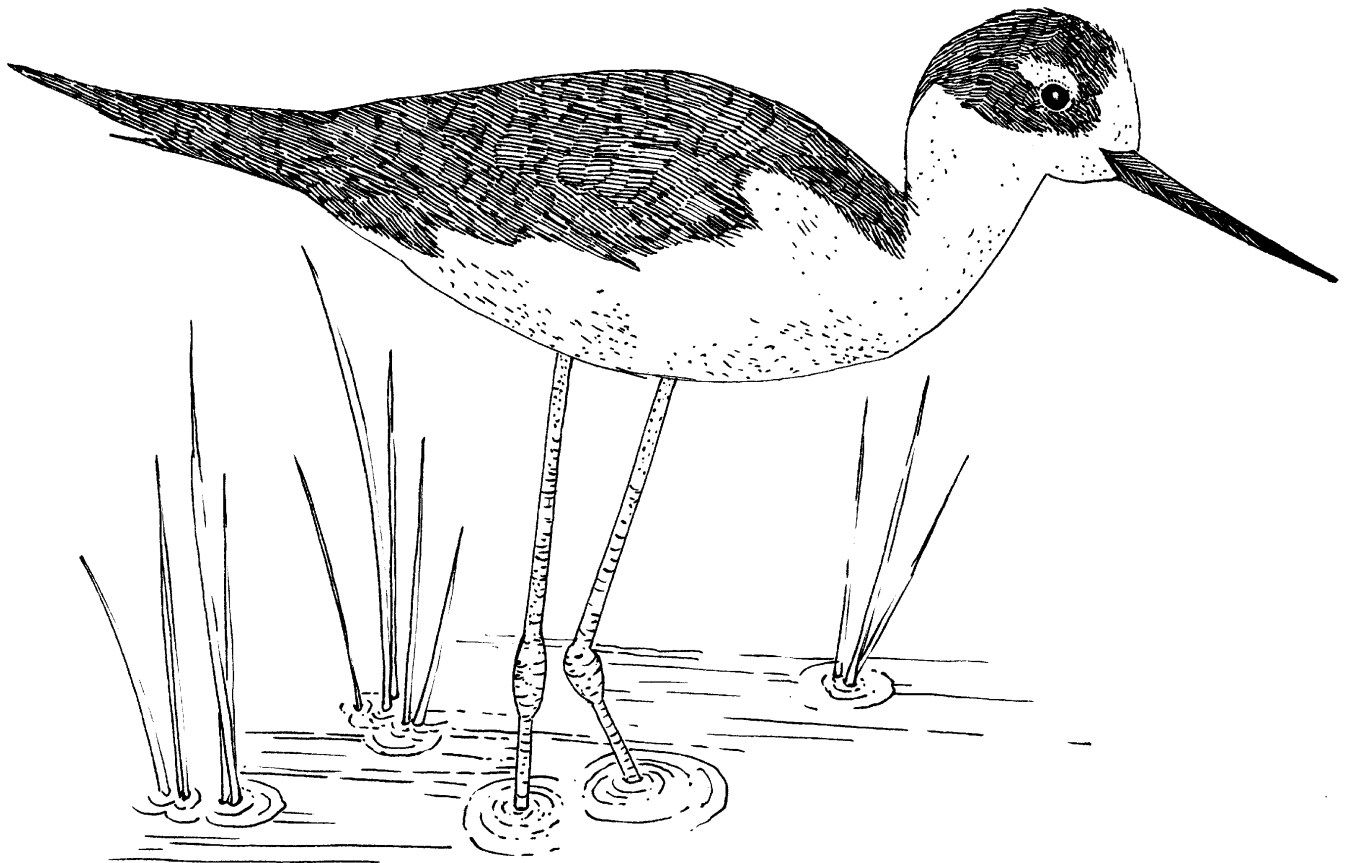


Monte Vista

National Wildlife Refuge

*Environmental Assessment
for the Parma Ranch
Proposed Addition*



ENVIRONMENTAL ASSESSMENT

Monte Vista National Wildlife Refuge

Parma Ranch Proposed Addition

U.S. Fish and Wildlife Service
November 2000

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Chapter 1. Purpose of and Need for Action

Introduction and Background

The San Luis Valley is located between the Sangre de Cristo Mountains and San Juan Mountains in south-central Colorado. Once a territory of the Ute Tribe, the San Luis Valley was first discovered by Europeans in 1694 and larger scale settlement began in the 1850s. The San Luis Valley is a desert, receiving only seven inches of precipitation annually, but each spring melting snow from the mountains feeds the Rio Grande and Valley streams and replenishes underground water supplies. In order to make this area agriculturally productive, a "ditch boom" in the 1880s created irrigation canals fanning from the Rio Grande River out into the Valley.

As large numbers of people came into the Valley, wildlife declined. Realizing the urgent need for a place for wildlife in the Valley, particularly waterfowl, the Monte Vista National Wildlife Refuge (NWR) was created in 1953 using funding from the Migratory Bird Conservation (Map 1). Alamosa National Wildlife Refuge was established in 1962, and in 1979, these two Refuges were combined administratively into the Alamosa-Monte Vista National Wildlife Refuge Complex. The major focus of the Refuge Complex is wetland vegetation and water management to provide food, cover, and production and migration habitat for migratory birds and other wildlife. Farming, grazing, and other programs are also used to ensure a healthy wildlife and wildlife resource.

Prior to European settlement in the San Luis Valley, Monte Vista NWR was largely devoid of wetlands, with no more than 5 percent of the Refuge area estimated to be wetland habitat. Today, most of the Refuge's wetlands are dependent upon application of surface water, supplemented by manipulation of the water table, where possible. Water is the primary instrument of wildlife production/conservation on the Refuge. Because of the altered hydrology of the San Luis Valley, this land can never again be truly wild. It must be managed in perpetuity in order to carry out the purposes of the Refuge.

Proposed Action

The Service proposes to purchase 465 acres of upland and wetland habitat, known as the Parma Ranch, from the Trust for Public Land. The water rights associated with this property also will be purchased by the Service. The proposed acquisition is located approximately 5 miles southeast from Monte Vista, Colorado in Rio Grande County in the San Luis Valley (Map 2). The legal description of the tract is T.38N., R.8E., N.M.P.M. that portion of the SE¼ of Section 22 lying east of the Empire Canal and the S½ and that portion of the NW¼ of Section 23 lying east of the Empire Canal, excluding center pivot irrigation.

Approximately 220 acres of wetlands will be restored and/or created on the property by the Service. Vegetation will be restored and maintained on the remaining 245 acres of uplands; however, 70 acres of existing farmland will likely be used for small grain production.

Additional water acquired through the purchase will be used to stabilize irrigation of 100 acres of wetlands in Unit #4 currently irrigated through the Parma drain. Another 200 acres of wetlands in Unit #4 would also be enhanced by the water associated with the purchase. Furthermore, a 250-acre wetland in Unit #5 could be restored with the additional water. This restoration would require placing a culvert under the County road along the east side of Unit #5 and construction of a siphon to return water to Rock Creek in the southeast corner of the Unit.

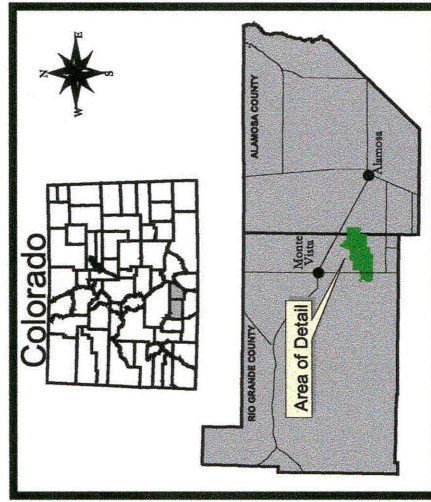
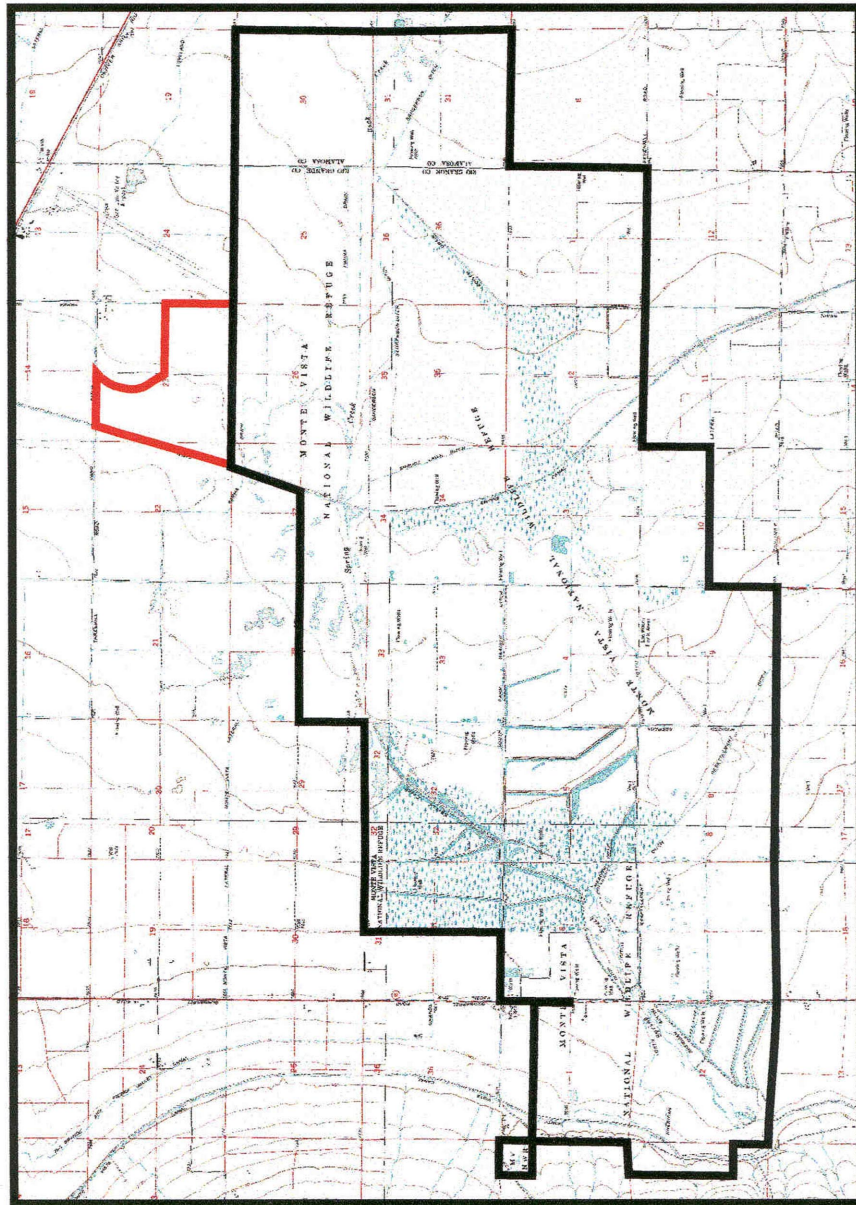
Monte Vista National Wildlife Refuge

Alamosa and Rio Grande County, Colorado



Legend

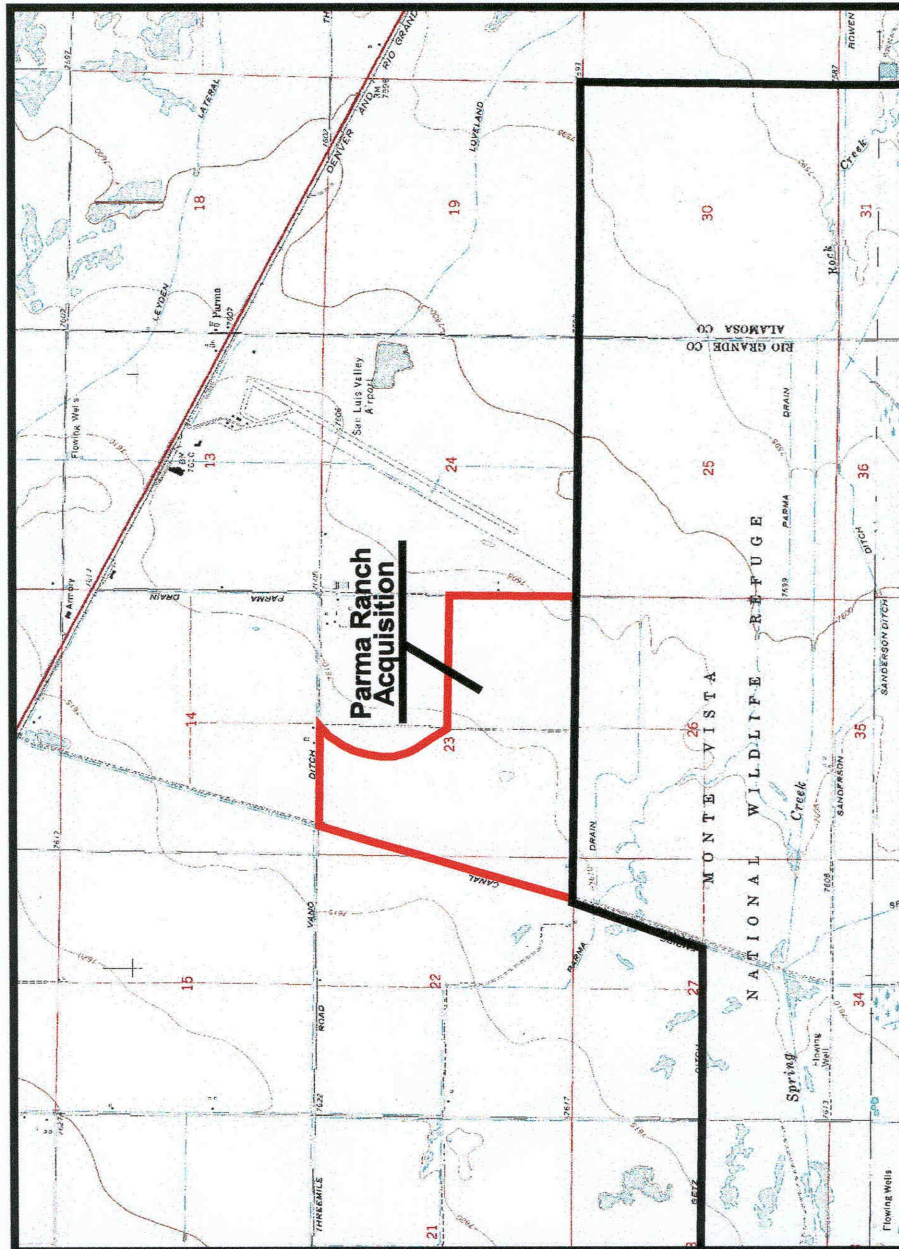
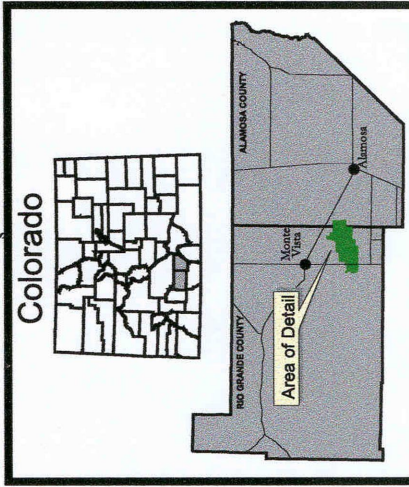
- Refuge Boundary
- Existing Refuge
- Parma Ranch



Map #1

Monte Vista National Wildlife Refuge

Alamosa and Rio Grande County, Colorado



Map #2

Purpose of Proposed Action

The purpose of the proposed action is to protect and restore wetlands on the Parma Ranch as well as restore and enhance wetlands on Refuge land adjacent to the Ranch through the associated water rights. The proposed acquisition also will help promote more efficient compatible agricultural activities. The proposed action will ultimately benefit migrating waterfowl, water birds (i.e., cranes) and shorebirds.

Need for Proposed Action

The proposed acquisition is needed to increase duck nesting habitat and improve the foraging, loafing, and brood-rearing habitat for water birds, waterfowl, and shorebirds. The water rights associated with the acquisition also are needed to restore and enhance 770 acres of short-emergent wetland habitat at the adjacent Monte Vista National Wildlife Refuge. An experimental wetland project on Refuge land adjacent to the Parma Ranch has been jeopardized by deed restrictions on water flow associated with the Ranch. Service acquisition of these rights would stabilize water flow to the experimental wetlands as well as 75 acres of nearby Refuge wetlands. In addition, 200 acres of wetlands in the same area have sporadic water sources that are difficult to control, problems that would be resolved through the proposed acquisition. Another 250-acre wetland downstream from this area is currently dry because a County road bisects the drainage area. With the additional construction of a culvert under the road and a siphon to return the water to Rock Creek, the additional water acquired through this land purchase would restore the 250-acre wetland.

Project Study Area

The proposed acquisition, known as the Parma Ranch, is located in Rio Grande County approximately 5 miles southeast from Monte Vista, Colorado in the San Luis Valley. The legal description of the tract is T38N., R.8E., N.M.P.M. that portion of the SE $\frac{1}{4}$ of Section 22 lying east of the Empire Canal and the S $\frac{1}{2}$ and that portion of the NW $\frac{1}{4}$ of Section 23 lying east of the Empire Canal (See Map 2).

Decisions To Be Made

Based on the analysis provided in this Environmental Assessment, the Regional Director of the U.S. Fish and Wildlife Service, Region 6-Mountain Prairie Region, will make three decisions:

1. Determine whether the Service should purchase the parcel known as the Parma Ranch. If yes,
2. Select an alternative for habitat protection; and
3. Determine whether the selected alternative will have a significant impact upon the quality of the human environment. This decision is required by the National Environmental Policy Act (NEPA) of 1969. If the quality of the human environment is not significantly affected, a Finding of No Significant Impact will be signed and will be made available to the public. If the alternative is determined to have a significant impact, then an Environmental Impact Statement will be prepared to further address those impacts.

Issues Identified and Selected for Analysis

Comments were solicited from the public for the proposed addition to the Monte Vista Refuge through a news release and a public meeting. A news release explaining the project and inviting the public to attend a public meeting was sent to the local newspapers in Monte Vista and one of the major newspapers in Denver. A total of 18 people attended the public meeting and provided comments on the project. The public meeting was held at the Monte Vista Refuge the evening of June 27, 2000. In addition, personal invitations were extended to the Congressional delegation.

Most people commenting on the project were supportive of the effort to acquire the wetland and upland habitat on the Parma Ranch. Some additional wildlife habitat and management issues were raised, such as:

Biological Issues

Wildlife

- The benefits of wetland and upland habitat on the Parma Ranch to waterfowl, shorebirds, and other water birds is currently not being maximized.
- Additional property is needed by the Refuge for waterfowl dispersal to prevent or protect waterfowl for disease.
- The Refuge needs additional property for sandhill crane resting and viewing areas.

Water Rights

- Deed restrictions associated with water rights in the Parma drain adjacent to the Parma Ranch prevent the Service from accessing their full water rights and maintaining a stable water source to wetlands on the Refuge.

Noxious Weeds

- Concern an increase in visibility of noxious weeds will occur.

Social and Economic Considerations

Farming

- Refuge staff currently perform all farming activities to provide small grain feed for migrating birds. The ability to increase farm production and move to a cooperative system with local producers is limited.
- Too many ranches in the valley are being separated into small tracts for ranchettes. The Refuge should buy the land and keep it in agriculture production or wildlife habitat.

Issues not Selected for Analysis

- Some individuals expressed a concern that the Federal government should not own additional land.

The Service only acquires land needed to fulfill the mission of the Refuge System. The mission of the Service is "working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people." The Service works within their funding authority and limited resources to fulfill its mission.

Related Actions and Activities

Rock Creek Heritage Project is a watershed and land protection initiative using private donations and Federal and State funds to buy conservation easements preventing development along the Rock Creek drainage north and west of Monte Vista National Wildlife Refuge.

Colorado Wetlands Initiative Legacy Project which is led by the Wetlands Program of the Colorado Division of Wildlife. The Wetlands Initiative is a voluntary approach to wetlands conservation and each of the 27 component projects have to meet the requirement of involving a “willing-to-participate-landowner.” It is an effort aimed at conserving all biologically significant wetlands of Colorado and associated wildlife including birds, mammals, reptiles, and amphibians.

Bureau of Reclamation Closed Basin Water Project - In the mid-1980s, the Bureau of Reclamation began construction of the SLV Closed Basin Project. The project area is along the east side (Closed Basin Area) of the SLV. The project's canal ends on the Alamosa Refuge where it dumps into the Rio Grande. As part of the mitigation requirements of the project, the Refuge annually receives up to 4,500 acre-feet of water from the project's canal to enhance wetlands. This water is used to irrigate wet meadows and provide wetlands throughout all but about 1,500 acres of the Refuge.

Trust for Public Land (TPL) was founded in 1972 as a national nonprofit working exclusively to protect land for human enjoyment and well-being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL pioneers new ways to finance parks and open space, promotes the importance of public land, and helps communities establish land protection goals.

Migratory Bird Conservation Act established the Migratory Bird Conservation Commission which oversees the purchase and rental of properties benefitting migratory birds. These land acquisitions are funded primarily through money generated by the purchase of Migratory Bird Hunting and Conservation Stamps or “Duck Stamps.”

North American Waterfowl Management Plan was enacted in 1986 to address declining waterfowl populations. Land protection efforts focus on quality waterfowl habitat, i.e., grasslands associated with wetlands. The funding and efforts for this project are based on a partnership between private landowners, U.S. Fish and Wildlife Service, Ducks Unlimited, State Game and Fish Department, and other partnerships of public and private organizations working toward the common goal of wetland preservation.

Private Landowners within the San Luis Valley have primary stewardship of the remaining wetland and grassland meadows. A significant portion of the wetland biodiversity of the San Luis Valley, in particular rare species and species of special concern, occur on private lands. Many landowners in the area are concerned with protecting wildlife and preserving wetlands and have worked cooperatively with the Service and other partner agencies.

National Wildlife Refuge System and Authorities

The Service proposes to acquire property, part of the Parma Ranch, to protect and maintain upland and wetland habitat for migratory birds and other species of animals and plants. The proposed resource protection actions would be consistent with the mission and guiding principles for the management and general public use of the National Wildlife Refuge System.

Guiding Principles of the National Wildlife Refuge System

1. **Habitat.** Fish and wildlife will not prosper without high-quality habitat, and without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.
2. **Public Use.** The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.
3. **Partnership.** America's sportsmen and women were the first partners who insisted on protecting valuable wildlife habitat within national wildlife refuges. Conservation partnership with other Federal agencies, State agencies, Tribes, organizations, industry, and the general public can make significant contributions to the growth and management of the Refuge System.
4. **Public Involvement.** The public should be given full and open opportunity to participate in decisions regarding acquisition and management of our National Wildlife Refuges.

The Parma Ranch acquisition would become part of Monte Vista National Wildlife Refuge in accordance with the overall mission of the National Wildlife Refuge System. The mission of the National Wildlife Refuge System is "to preserve a national network of lands and waters for the conservation and management of fish, wildlife, and plant resources of the United States for the benefit of present and future generations." The broad goals of the National Wildlife Refuge System describe the conservation of the nation's wildlife resources for the ultimate benefit of people.

Goals of the National Wildlife Refuge System

- A. To preserve, restore, and enhance in their natural ecosystems (when practicable) all species of animals and plants that are endangered or threatened with becoming endangered.
- B. To perpetuate the migratory bird resource.
- C. To preserve a natural diversity and abundance of fauna and flora on refuge lands.
- D. To provide an understanding and appreciation of fish and wildlife ecology and the human's role in the environment.
- E. To provide refuge visitors with high quality, safe, wholesome and enjoyable recreational experiences oriented toward wildlife, to the extent these activities are compatible with the purpose for which the refuge was established.

The proposed addition to Monte Vista National Wildlife Refuge would be managed as part of the National Wildlife Refuge System in accordance with the National Wildlife Refuge System Administration Act of 1966, Refuge Recreation Act of 1962, Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System), National Wildlife Refuge System Improvement Act of 1997, and other relevant legislation, executive orders, regulations, and policies.

Purpose of Alamosa and Monte Vista National Wildlife Refuges

Alamosa and Monte Vista National Wildlife Refuges were established under the authority of the Migratory Bird Conservation Act. Under the Migratory Bird Conservation Act, the Refuges are managed for use as inviolate sanctuaries, or for any other management purpose, for migratory birds.

Goals of Alamosa and Monte Vista National Wildlife Refuges

The goal of Alamosa and Monte Vista National Wildlife Refuges is to increase the diversity and abundance of native species in the San Luis Valley by providing wetlands and native plant communities for native wildlife at risk, water birds, and migratory birds in a manner that complements the San Luis Valley ecosystem. Major components are: shorebirds, waterfowl, raptors, colonial nesters and waders, sandhill cranes, neotropical and other birds, other native fauna, vegetative composition and manipulation (weed control), National Wildlife Refuge System Goals and education and recreation.

Conservation of wildlife habitat with the addition of the Parma Ranch to Monte Vista National Wildlife Refuge also would continue to be consistent with the following policies and management plans:

1. North American Waterfowl Management Plan (USFWS 1987, updated 1994, 1998)
2. Bald Eagle Recovery Plan (Northern states) (USFWS 1983)
3. Whooping Crane Recovery Plan (USFWS 1994 revised)
4. San Luis Valley Waterbird Plan (USFWS, CDOW, BLM 1995)
5. Management Plan of the Pacific and Central Flyway for the Rocky Mountain Population of the Greater Sandhill Cranes (Pacific Flyway study Committee and Central Flyway Technical Committee Revised 1998)
6. Nongame Bird Management Plan for Region 6 (USFWS 1993)

The Habitat Protection and Land Acquisition Process

Once the project area boundary is approved, the tract will be fee-title purchased from the Trust for Public Land. The authority for the acquisition is from the Migratory Bird Conservation Act (16 U.S.C. 715d) "...for the use as an inviolate sanctuary, or for any other management purpose, for migratory birds." Funds collected from migratory bird hunting and conservation stamps or "Duck Stamps" sales are deposited directly into the Migratory Bird Conservation Fund to purchase wetlands and wildlife habitat for inclusion into the National Wildlife Refuge System. The Migratory Bird Conservation Commission oversees the purchase and rental of properties benefitting migratory birds.

The Service may use other means of habitat protection such as no-cost transfer, long-term lease, donation or exchange. It is the established policy of the Service to acquire land or interest of land from willing sellers.

The basic considerations in acquiring land are the biological significance of the land, existing and anticipated threats to wildlife resources, and landowner's willingness to sell an interest of the property, or otherwise make property available to the project. The purchase of grassland easements progresses according to the availability of funds.

Refuge Revenue Sharing Act

Under provisions of the Refuge Revenue Sharing Act (Public Law 95-469), the Service annually reimburses counties to offset revenue lost as a result of acquisition of property. This Law states that the Secretary of the Interior (Secretary) shall pay to each county in which any area acquired in fee title is situated, the greater of the following amounts:

1. An amount equal to the product of 75 cents multiplied by the total acreage of that portion of the fee area which is located within such county.
2. An amount equal to 3/4 of 1 percent of the fair market value, as determined by the Secretary, for that portion of the fee area which is located within such county.
3. An amount equal to 25 percent of the net receipts collected by the Secretary in connection with the operation and management of such fee area during such fiscal year.

However, if a fee area is located in two or more counties, the amount for each county shall be apportioned in relationship to the acreage in that county. The Refuge Revenue Sharing Act also requires that Service lands be reappraised every five years to ensure that payments to local governments remain equitable. Payments under this Act would be made only on lands that the Service acquires in fee title.

Chapter 2. Alternatives, Including the Preferred Alternative

Chapter 2 describes two alternatives: a no action alternative and the preferred alternative to acquire 465 acres known as the Parma Ranch.

Alternative A. No Action

Under Alternative A, the Service would not purchase the Parma Ranch or its associated water rights.

Alternative B. Acquisition of the Parma Ranch as an addition to Monte Vista National Wildlife Refuge

Under Alternative B, the Service would acquire simple fee interest in the 465-acre Parma Ranch and its associated water rights adjacent to the Monte Vista National Wildlife Refuge. The Service is working with the Trust for Public Land (TPL), a national non-profit organization that specializes in structuring conservation real estate transactions, to properly execute the acquisition. TPL has secured an option to purchase the property and will complete all the actions necessary to complete the transaction. Once TPL takes ownership of the property, it will be conveyed subsequently to the Service for inclusion in and management under the Monte Vista National Wildlife Refuge.

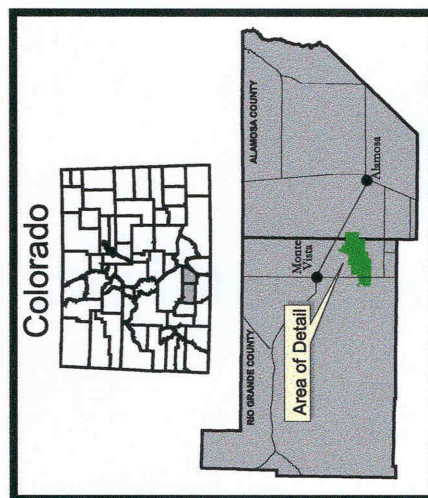
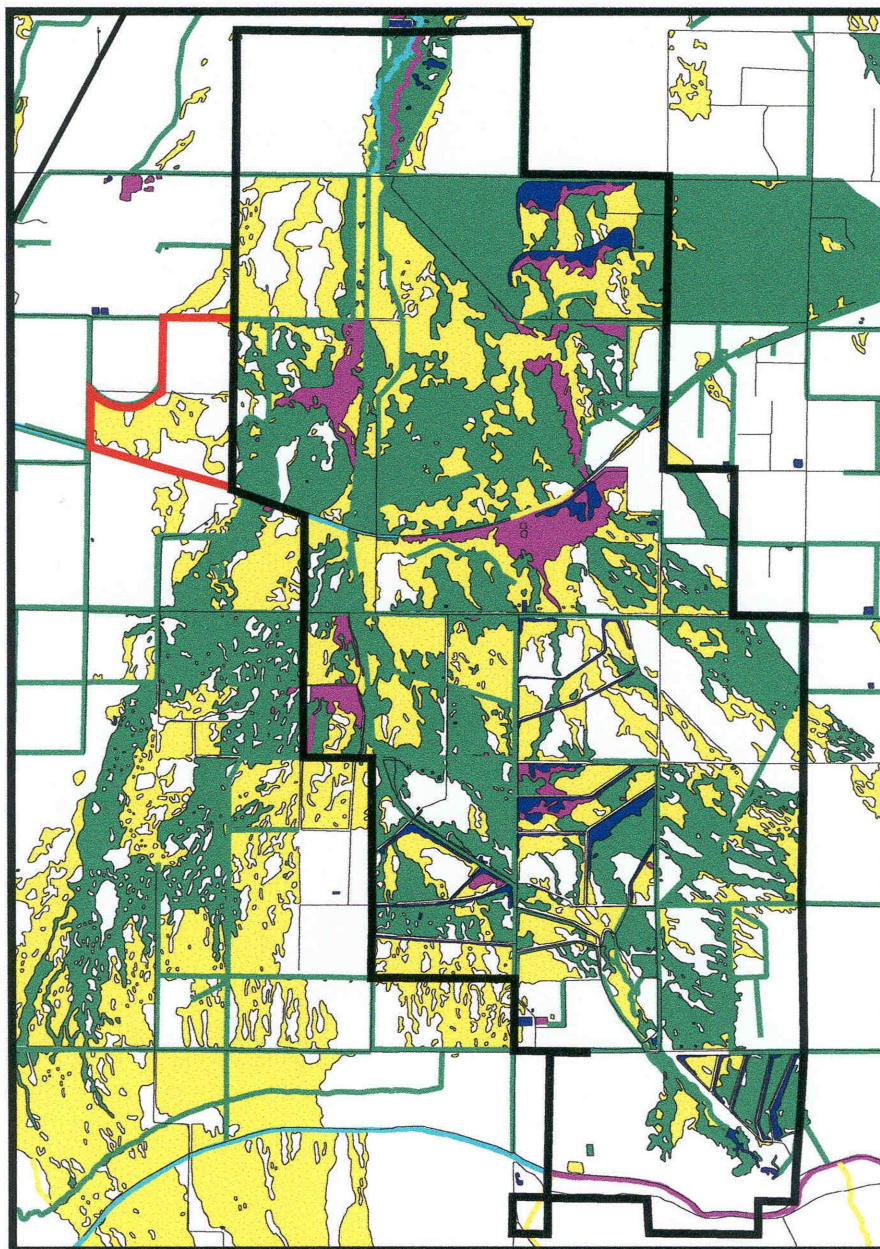
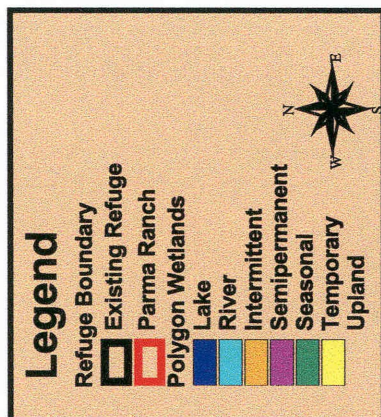
Under Refuge ownership, 150 acres identified as wetland habitat by the National Wetlands Inventory in the W½ of Section 23 will be restored by maintaining the existing hydrology and restoring the vegetative community by removing livestock and ending mechanical removal of the shrub community (Map 3). Longer term restoration objectives would be determined after assessing habitat response to the initial restoration effort.

In the SE¼ of Section 23, another 70 acres of wetland habitat, currently used for production of small grain crops, would be restored. Restoration would be accomplished by eliminating farming and restoring flood irrigation practices that were employed prior to conversion to center pivot irrigation in the early 1980s. Reestablishment of some ditches and small levees likely will be required. Approximately one-half of the 152 acres currently used for small grain production on the Parma Ranch would be retained for farming. The remaining upland acres will be retained on the property.

The additional water rights associated with the Parma Ranch would be used to stabilize water flows to enhance and restore a total of 770 acres of wetlands on Monte Vista National Wildlife Refuge. Water rights associated with the proposed acquisition include nine shares of the Commonwealth Irrigation Company for 5.63 cubic feet/second for irrigation, Vano Drain priority No. 1959-5 for 12.5 cubic feet/second for irrigation, Parma Drain, Priority No. 19-11 (Getz Seepage #4) for 4.25 cubic feet/second for irrigation, well #1 at 2,212 acre-feet/year used for irrigation and fish/aquaculture, well #4 at 825 acre-feet/year for irrigation and stock and one small 2 inch artesian well.

Monte Vista National Wildlife Refuge

Alamosa and Rio Grande County, Colorado



Map #3

Chapter 3. Affected Environment

Affected Environment

The proposed Parma Ranch acquisition is adjacent to the northeast portion of Monte Vista National Wildlife Refuge in the San Luis Valley (SLV), a high mountain valley located in south-central Colorado. The SLV consists of a broad depression between mountain ranges converging to the north and is the first of a series of basins along the Rio Grande. The mountain ranges to the east reach altitudes over 14,000 feet and those to the west range between 13,000 and 14,000 feet. The length of the Valley from north to south is about 80 miles, and its greatest width is about 50 miles.

Climate

Average annual precipitation in the San Luis Valley is seven inches. Sixty percent of this falls between July and August, mostly from spotty thundershowers of short duration. Wide seasonal and yearly variations are common. Mean annual temperature is 42 degrees Fahrenheit. Summer daytime temperatures are frequently in the 80s, but rarely exceed 90 degrees Fahrenheit, and nights are cool. Temperatures of -20 to -30 degrees Fahrenheit can be expected each year and are common most winters. Relative humidity is usually low but evaporation rates average lower than those of many other dry regions because of the cool climate. Snow cover may be light and is sometimes lacking through much of the winter.

Water

All Refuge habitat is influenced by irrigation water applied both on and off the Complex. Water in the San Luis Valley and on the Refuge primarily comes from snow melt. Water is diverted for irrigation from rivers, such as the Rio Grande River and pumped. Artesian well water and groundwater are also used. Water in the Rio Grande is generated from snowfall in the San Juan and Sangre de Cristo Mountains. Monte Vista Refuge receives irrigation water from the Rio Grande primarily from the Empire and Monte Vista Canals and water draining off neighboring private lands. The primary use of this irrigation water is to create wetland habitat throughout the Monte Vista Refuge as well as irrigate cropland and is facilitated by 25 major dikes, 40 smaller dikes, over 600 water control structures, and 61 miles of ditches.

Monte Vista NWR has approximately 223 artesian wells and 21 pumped wells. Almost all of the Refuges artesian wells (both small and large) cease artesian flow during the summer months when maximum pumped well-use is required for irrigation both on and off the Refuge. Since 1981, no well construction permits for new water appropriations, other than exempt domestic-types, have been issued throughout the entire SLV to conserve groundwater levels.

The San Luis Valley contains two types of aquifers, the shallow unconfined and the deep confined. The confined aquifer supports most artesian flows. These aquifers consist mainly of unconsolidated clay, silt, sand, and gravel. The unconfined aquifer is separated from the confined aquifer by clay layers and lava flows. Unconfined groundwater occurs nearly everywhere in the Valley and confined groundwater occurs under nearly one-half of the Valley (Emery et al. 1973).

Refuge groundwater levels range from about 6 inches to 6 feet below the surface. The high groundwater table effects overall vegetation in this high mountain desert and is partially related to the amount and timing of irrigation water applied to Refuge lands as well as lands throughout the SLV. Two major SLV groundwater drainage ditches, the Bowen and Parma Drains, terminate on Monte Vista Refuge and also supply water to the Refuge. The drains were dug in the early 1900s to facilitate cropland farming by decreasing high groundwater levels. The Parma drain flows along the east side of the acquisition and the Empire canal forms the western boundary of the acquisition.

Soils and Vegetation

The Parma Ranch acquisition is a combination of upland vegetation communities. Hay meadow/pasture covers 115 acres, brush pasture occurs on 177 acres, and the remaining 152.5 acres are center pivot sprinkler irrigated farmland.

The acquisition is adjacent to Monte Vista NWR which has three major soil/vegetation association groups (USDA, SCS, 1980):

Luhon-Garita-Travelers Association (Foothills Plant Community)

Very gently sloping to moderately steep, well drained to somewhat excessively drained, medium textured to moderately coarse textured, deep to shallow, cobble and stony soils on alluvial fans, foothills, and mesas.

This association occurs along the western edge of the Monte Vista Refuge. The landscape is one of very gently sloping to moderately steep alluvial fans, foothills, and mesas. Many gullies have formed in the steeper hills and in valley bottoms. The soils formed in mixed alluvium and in residuum weathered from basalt. The vegetation is primarily winterfat, low rabbitbrush, blue grama, Indian ricegrass, ring muhly, and snakeweed.

Hooper-Arena-San Luis Association (Salt Desert Shrub Plant Community)

Nearly level, well drained to poorly drained, moderately fine textured to coarse textured, alkali soils that are 20 to more than 60 inches deep over sand and gravel; on alluvial fans and old floodplains.

This association, intermingled throughout most of the Monte Vista Refuge, is at the lower end of alluvial fans and on old floodplains on the valley floor. The soils formed in mixed alluvium. The vegetation on nonirrigated soils is primarily greasewood, rabbitbrush, alkali sacaton, and saltgrass.

Torrifluvents-Torssido-Alamosa Association (Wet Meadow/Marsh/and Cropland Plant Communities)

Nearly level to gently sloping, excessively drained to poorly drained, moderately coarse textured to moderately fine textured soils that are 10 to 60 inches deep over sand and gravel; on floodplains, alluvial fans, and terraces.

This association is also intermingled throughout most of Monte Vista Refuge. The landscape is one of nearly level floodplains and nearly level or very gently sloping alluvial fans and terraces. The soils formed in mixed alluvium. The vegetation is primarily sedges, rushes, tufted hairgrass, slender wheatgrass, and alkali sacaton in wet meadows and cattail and bulrush in marshes. Small grains and alfalfa are recognized irrigated cropland uses for this soil association.

Wildlife

In its current condition, the Parma Ranch is used heavily by sandhill cranes, waterfowl, and shorebirds on a seasonal basis. On the adjacent Monte Vista NWR, ducks are abundant during the spring, summer, and fall with annual population peaks occurring in mid-March. Seventeen duck species frequent the Refuge. Ten species nest on the Refuge. The major nesting species are mallard, gadwall, and cinnamon and blue-winged teal. Black-crowned night herons, white-faced ibis, and snowy egrets commonly use the wet meadow and marsh communities during the spring, summer, and fall. All are common nesters on the Complex. American avocets, American bitterns, common snipe, black-necked stilts, killdeer, and Virginia and sora rails nest on the Complex and are commonly seen during spring, summer, and fall in wet meadow and marsh communities. These habitats also support 18 other species of shorebirds in all but the winter season. Marsh wrens are abundant and Virginia rails are common and nest on the Complex. Northern harriers, short-eared owls, yellow-headed and red-winged blackbirds also nest on the Complex and are associated with wetland habitat. Both rough-legged hawks and golden eagles are frequently seen on the Complex.

Beaver, muskrat, and raccoon range from common to abundant in wetland habitat. Coyotes and skunks are abundant and use all the vegetative communities found on the Refuges. Mule deer and some elk use all Complex communities all year-round while elk use of the Monte Vista Refuge increases during the winter months. Both deer and elk make extensive use of Monte Vista Refuge croplands with field peas sought after as a winter forage.

Identified amphibians and reptiles using Complex habitats are the tiger salamander, plains spadefoot frog, great plains toad, Woodhouse's toad, striped chorus frog, bullfrog, northern leopard frog, short-horned lizard, eastern fence lizard, many-lined skink, bullsnake, western terrestrial garter snake, and western rattlesnake.

A complete list of species found on Monte Vista Refuge can be found in Appendix A.

Threatened and Endangered Species

Whooping cranes (endangered) that use the Refuges are a result of the Foster Parent Program within the Rocky Mountain greater sandhill crane population and the "ultra-light experiment in 1998." Two whooping cranes are left in the Rocky Mountain population. The remaining two whooping cranes migrate with the Rocky Mountain sandhill crane flock twice a year between their summer areas in Wyoming, Montana, and Idaho and winter areas in the middle and lower Rio Grande Valleys. During spring and fall migration, cranes stop in the San Luis Valley for several weeks to rest and feed. While rare, whooping cranes are commonly observed in the project area during spring and fall migrations. Wet meadows and marsh edges provide the whooping crane's primary habitat, which they use for resting, roosting, and some feeding. Monte Vista Refuge small grain croplands provide the cranes primary food source during spring migration. Two of the original birds still survive and migrate through the San Luis Valley.

Several species of management concern also use habitat on the Refuges, such as the white-faced ibis, black tern, and the American bittern. The white-faced ibis relies heavily on the Complex's habitat in spring, summer, and fall for nesting, resting, and feeding. One of the largest nesting colonies in Colorado is found on Monte Vista Refuge. Black terns use the emergent wetland habitat on both Refuges (Andrews et al 1992).

Approximately 2 to 6 pairs of black terns nest on both Refuges. Ferruginous hawks are rare but have been documented using the wetland and salt desert shrub habitat of both Refuges.

Social and Economic Considerations

The SLV area consists of six counties: Alamosa, Conejos, Rio Grande, Costilla, Mineral, and Saguache counties. The total population for the area, over a 15-year period, has increased about 7 percent and is presently estimated at about 40,000 people. Alamosa and Rio Grande counties have experienced the largest increase in population. Alamosa County has the largest population of the five counties, about 14,000 people. (Population Estimates program, Population Division, U.S. Bureau of the Census, 1997).

Alamosa County employs over 66 percent in retail trade, service, and government; 9 percent of the labor force is in farming (USDI, BLM, 1989). The city of Alamosa in Alamosa County provides retail trade and support services for the surrounding smaller communities and rural areas. Alamosa, an academic community associated with Adams State College, offers the community additional cultural activities. The rural areas support a ranching and farming lifestyle with rodeos, 4-H clubs, Boy Scouts, and riding clubs.

Landownership

No new or additional zoning or land-use regulations would be created by the Service within the approved addition to the Refuge or to neighboring landowners. The land-use would change from agricultural land to wildlife preservation.

Property Tax

Rio Grande County currently collects property taxes on the Parma Ranch. The private property tax is based on the assessed value of the agricultural land. Upon acquisition of the Parma Ranch by the Service, Rio Grande County will receive payments in-lieu-of-taxes from the Service under the Refuge Revenue Sharing Act (see Chapter 1). This payment is estimated at \$6,088.

Public Use and Wildlife-dependent Recreational Activities

The SLV provides opportunities for hunting, fishing, wildlife observation, off-highway vehicle use, hiking, picnicking, camping, vegetation and mineral gathering, snowmobiling, cross-country skiing, general leisure, and sightseeing. Although this region has a low population density, national attention focuses on attractions such as the Great Sand Dunes National Monument, Sangre de Cristo Mountains, Rio Grande Corridor, Rio Grande National Forest, south San Juan Mountains, and Alamosa and Monte Vista National Wildlife Refuges (USDI, BLM, 1989).

About 30,000 people visit the Refuges annually. The Refuges have visitor contact stations, auto tour routes, nature trails, several wildlife observation areas, and waterfowl/small game hunting areas. The Monte Vista Crane Festival attracts approximately 13,000 visitors each year. It is the largest and oldest wildlife event in Colorado. Refuge employees, Friends of the San Luis Valley National Wildlife Refuges, and volunteers provide spotting scopes and interpretation to Refuge visitors as a partnership with the Monte Vista Crane Festival Committee.

Cultural, Archaeological, and Historical Resources

In May 1991, a sample inventory for cultural resources was conducted on three sections of the Refuge. Six sites and four isolated finds were recorded on Monte Vista Refuge; however, none of the isolated finds are considered eligible for nomination to the National Register of Historic Places. Some of the sites contained artifacts in the range of 3,000 B.C. to 900 A.D. and were found in the Spring Creek area of Monte Vista Refuge (Lewis, 1991).

Contaminants and Hazardous Waste

Fieldwork for the pre-acquisition contaminant survey was completed. The preliminary survey conducted on these tracts determined that no contaminants pose a threat to fish and wildlife or they would be a liability to the Service (Esperance, 2000).

Chapter 4. Environmental Consequences

Effects on the Biological Environment

This section assesses the environmental impacts expected to occur from the implementation of either Alternative A or B, as described in Chapter 2.

Environmental impacts are analyzed by issues for each alternative and appear in the same order as discussed in Chapter 1.

Wildlife

Alternative A (No Action) - If the Service does not purchase the Parma Ranch, waterfowl, water birds, and shorebirds will continue to use the property on a limited basis, but an opportunity to restore and improve 220 acres of wetlands and 244 acres of upland habitat for these birds will be lost. Heavy historic grazing on the Parma Ranch has reduced or eliminated the wetland vegetation from reaching a density and a structure that provides cover to nesting ducks, rails, northern harriers, shorebirds, and other species. A denser vegetative overstory also provides cover/habitat for rodents and other species which are the prey base for raptors (especially in the winter) and other species. By not removing shrubs, such as greasewood in dry areas, the shrubs will provide nesting structure for some birds such as mourning doves, sage thrashers, and others.

Alternative B (Preferred Alternative) - This alternative benefits wildlife on the Parma Ranch and the adjacent Monte Vista Refuge. The number of species, timing of use and types of uses will increase on the Parma Ranch once wetlands and uplands are restored. The species that will benefit on the Parma Ranch include foraging ducks such as mallard, northern pintail, and teal, foraging water birds such as white-faced ibis, egrets, geese, shorebirds such as black-necked stilts, common snipe, Wilson's phalarope, killdeer, and others. Once vegetation structure and density is increased, many of the above mentioned species will also nest on the Parma Ranch, either for the first time or in greater numbers with greater success.

The restoration of shallow water wetlands also increases the amount of potential loafing habitat for sandhill and whooping cranes.

The farming practices (timing, crop type) used on the Parma Ranch will be those that maximize the benefit to wildlife. Due to the recent economy, many farmers in the San Luis Valley have gone to growing alfalfa versus wheat and barley. Migrating cranes are especially dependent upon the availability of waste grain during the fall and spring migration and reductions in the availability of grain may have detrimental impacts on these species. Additionally, farming practices in the fall have changed in the last few years, farmers are either tilling or irrigating grain fields after the harvest to discourage any volunteer plants, then in the spring they can start planting without having to clear the fields. This practice may be reducing the amount of waste grain that is available in the fall and subsequent spring which is a critical period for migrating birds. Therefore, Alternative B allows for the production of small grains which will be left standing until the spring when food supplies are more limited for migrating cranes, waterfowl, geese, and other wildlife.

Wildlife using the adjacent Monte Vista Refuge will also benefit. By securing water rights and use of water, the maintenance of duck nesting habitat is better guaranteed especially during dry years. This water will ensure that appropriate water conditions will be available to nesting ducks and more importantly to subsequent broods. During duck brood counts in the summer of 2000, the Parma Drain just north of the Refuge was filled with ducklings because that water was some of the only water around. Additionally, a benefit will occur to nesting and foraging rails, shorebirds, raptors, passerines, and other water birds.

Alternative B will provide a mixture of habitat types which support almost all of the migratory and resident birds that use the Refuge Complex. In other words, the number of avian species that will benefit is potentially the entire suite of birds that use the San Luis Valley. Alternative B improves the quality and increases the availability of habitat on- and off-refuge and allows for greater management flexibility.

Water Rights

Alternative A (No Action) - In the early 1960s, the Refuge purchased two quarter sections of land and a 4.25 cfs water right in the Parma Drain (Getz Seepage #4) adjacent to the Parma Ranch. Deed restriction on these two sections prevent the Refuge from exercising its Parma Drain water right if doing so would sub-irrigate farmland in Section 23. Due to chronic sub-irrigation problems, this water right and much of the additional tailwater in the ditch is unavailable for use on Refuge wetlands since it is diverted outside of Refuge boundaries in order to lower water levels in the ditch. This has jeopardized a long-term study of experimental wetlands on adjacent Refuge land as well as reducing other wetlands under irrigation by approximately 75 acres. It also periodically has placed refuge managers at odds with the Parma Ranch owners. This situation would continue under the No Action alternative.

Alternative B (Preferred Action) - Though the Parma Ranch is only 465 acres, with associated water rights, it creates an opportunity to restore and enhance approximately 770 acres of short-emergent wetland habitat at the Monte Vista National Wildlife Refuge. Moreover, the acquisition will create new flexibility in how the Refuge staff manages its water supplies and will remove periodic conflicts with Parma Ranch owners over water supplies to wetlands on the Refuge. This flexibility will allow for creation of extremely dense stands of short-emergent wetland species such as Baltic rush, with associated benefits for nesting cinnamon teal, mallards, and Wilson's phalaropes, as well as shorter, more broken Baltic rush stands with shallower water interspersed with greasewood and salt grass that are valuable to nesting American avocets and black-necked stilts.

Noxious Weeds

Alternative A (No Action) - As in many places in the western states, noxious weeds are becoming a greater management challenge to public and private landowners. Under this alternative, noxious weed populations would likely remain less visible to the public due to the heavy grazing pressure applied under current management practices. The counties of San Luis Valley have taken an active role in fighting the spread of noxious weeds. The San Luis Valley Coordinated Noxious Weed Program (Alamosa, Conejos, Costilla, Mineral, Rio Grande, and Saguache counties) have received a grant from the State of Colorado and federally matching grant from the National Fish and Wildlife Foundation to build upon its efforts to establish a coordinated, valley-wide weed management effort and standardized mapping system (Colorado State, Dept. of Ag, 2000).

Alternative B (Preferred Action) - Because most of the Refuge lands are wetlands, the Service is limited on the approach in techniques in management. Tall whitetop weed invasion into wet meadow communities can be extensive under long-term rest and create monotypic conditions. The Service will be taking advantage of all control tactics available, including beneficial insects. Under this alternative, noxious weeds will likely be more visible to the public since grazing pressure from livestock will likely be reduced to release growth of desired plant species. Noxious weed control efforts will be most intense along acquisition boundaries shared with private landowners. All legal and approved means will be employed to contain weed infestations on Refuge lands.

Social and Economic Considerations

Farming Activities

Alternative A (No Action) - Approximately 400 acres of the Refuge are currently farmed for the production of high-energy foods for early arriving nesting ducks and migrating sandhill cranes. Under the current Refuge farming program, all acreage under production in a given year is devoted to wildlife use, and Refuge staff conduct all farming activities. Without the acquisition of the Parma Ranch, the Refuge would lose an opportunity to move towards a different approach to the Refuge farming program with potential savings to the Refuge's financial and staff resources.

Alternative B (Preferred Alternative) - Approximately 400 acres of the Refuge are currently farmed for the production of high-energy foods for early arriving nesting ducks and migrating sandhill cranes. Under the current Refuge farming program, all acreage under production in a given year is devoted to wildlife use, and Refuge staff conduct all farming activities. The Parma Ranch acquisition would afford an opportunity for Refuge staff to move toward a different approach to the Refuge farming program with potential savings to the Refuge's financial and staff resources. By increasing the amount of farmland available for grain production within the Refuge (approximately 70 acres), the Refuge will be closer to conducting all Refuge farming on a cooperative basis whereby a private farmer produces the crop on Refuge land in exchange for a portion. While some debate exists among scientists concerning the necessity of increasing the availability of small grains for migrating sandhill cranes, it is generally agreed that at least the current farming levels should be maintained. The proposed acquisition, with the prospect for sub-contracting a portion of the farming to private individuals, will at a minimum permit maintenance of existing grain production levels at less cost to the Refuge.

Chapter 5. Interim Compatibility Determination

Refuges are Primary-Use Areas

Units of the National Wildlife Refuge System are managed as primary-use areas; that is, primarily for the benefit of fish, wildlife, and their habitats. In addition, refuges are closed to other uses unless specifically and formally opened (National Wildlife Refuge System Administration Act of 1966 [NWRAA of 1966, 16 U.S.C. 668dd]). This contrasts with units of other Federal land management systems managed under a multiple-use mandate (i.e., national forests administered by the U.S. Forest Service and public lands administered by the U.S. Bureau of Land Management).

The Compatibility Standard

Before activities or uses can be allowed on a national wildlife refuge, Federal law requires that they be formally determined to be "... compatible with the major purposes for which such areas were established ..." (NWRAA of 1966). A compatible use is a use that, in the sound professional judgement of the Director, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purpose of the Refuge (NWRS Improvement Act of 1997).

For recreational uses to be allowed, it must be determined that the uses are practicable and that they will not interfere with the primary purposes for which the areas were established. Currently, the Monte Vista Refuge is developing a Comprehensive Conservation Plan to guide management and public uses on the Refuge for the next 15 years. The Service will assess the wildlife-dependent uses of the 465-acre addition and develop funding request to support these uses if otherwise found compatible.

Interim Compatibility Determination

The Service is required by Executive Order 12996 of March 25, 1996, to identify, prior to acquisition of new refuges or refuge additions, existing owner-authorized, wildlife-dependent recreational activities that would be allowed following Service acquisition. Wildlife-dependent recreational activities within the Parma Ranch proposed addition are identified in Table 1.

The proposed Parma Ranch addition is currently in private ownership and public access is not allowed; however, public viewing and photography is accessible from the public road on the north side of the proposed addition.

Over the next three years, the Service will be administering habitat restoration projects on the Parma Ranch addition. As part of the restoration, the Service plans on restoring wetland vegetation and hydrology; farming practices will change to more directly benefit migratory birds. If wildlife respond well in areas that can be seen or accessed from the county road, plans will be initiated to develop and fund public viewing, photography, and interpretation and environmental education if such projects are determined to be practical and compatible at that time. The Service will evaluate the wildlife uses first on the restored wetland and framing tract before public uses in Table 1 can be considered. Once that is determined, the Service can assess these potential uses and gauge their impact on wildlife resources.

Table 1. Interim Compatibility Determination Matrix			
Wildlife-dependent Recreation Activity	Existing Activity	Compatible for Interim Period	Interim Use Allowed?
Wildlife Observation	No	No	No
Environmental Interpretation	No	No	No
Wildlife Photography	No	No	No
Environmental Education	No	No	No
Hunting	No	No	No
Fishing	No	No	No

Chapter 6. Coordination and Environmental Review

Agency Coordination

The proposal for the addition to Monte Vista Refuge, through the authorization of an executive boundary to protect an additional 465 acres, has been discussed with landowners, conservation organizations, Federal, State and county governments, and other interested groups and individuals.

This Environmental Assessment addresses the protection of wetlands and the acquisition of water rights, primarily through fee title acquisition, by the Service under the direction of the National Wildlife Refuge System.

Funding for the fee title acquisition will be provided by the Migratory Bird Conservation Fund. Management activities associated with the acquisition could be funded through other sources, such as the North American Wetlands Conservation Act grants, Ducks Unlimited, and Partners for Fish and Wildlife.

National Environmental Policy Act

As a Federal agency, the U.S. Fish and Wildlife Service must comply with provisions of the National Environmental Policy Act (NEPA). An Environmental Assessment is required under NEPA to evaluate reasonable alternatives that will meet stated objectives and to assess the possible impacts to the human environment. The Environmental Assessment serves as the basis for determining whether implementation of the proposed action would constitute a major Federal action significantly affecting the quality of the human environment. The Environmental Assessment also facilitates the involvement of government agencies and the public in the decision making process.

Other Federal Laws, Regulations and Executive Orders

In undertaking the proposed action, the Service would comply with a number of Federal laws, Executive Orders, and legislative acts, including:

- Floodplain Management (Executive Order 11988)
- Intergovernmental Review of Federal Programs (Executive Order 12372)
- Protection of Historical, Archaeological and Scientific Properties (Executive Order 11593)
- Protection of Wetlands (Executive Order 11990)
- Management and General Public Use of the National Wildlife Refuge System (Executive Order 12996)
- Endangered Species Act of 1973, as amended
- Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970, as amended
- Refuge Recreation Act, as amended
- Refuge System Administration Act, as amended
- National Historic Preservation Act of 1966, as amended.

Distribution and Availability

Copies of the Environmental Assessment were sent to Federal and State legislative delegations, agencies, landowners, private groups and other interested individuals. Additional copies of this document are available at the U.S. Fish and Wildlife Service, Alamosa - Monte Vista National Wildlife Refuge, 9383 El Rancho Lane, Alamosa, Colorado 81101 (phone 719-589-4021; fax 719-587-0595), and at the U.S. Fish and Wildlife Service, Division of Realty, P.O. Box 25486-DFC, Denver, Colorado 80225 (phone 303-236-8145 ext. 658; fax 303-236-4792).

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References

Andrews, Robert and Robert Righter. 1992. Colorado Birds: A Reference to Their Distribution and Habitat. Denver Museum of Natural History. 442 pp.

Colorado, State of, Department of Agricultural, 2000. <http://www.ag.state.co.us/>

Emery, P.A., R.J. Snipes, J.M. Dumeyer, and J.M. Klein. 1973. Water in the San Luis Valley, south-central Colorado. Colorado Water Resources Circular 18. Colorado Water Conservation Board, 1845 Sherman Street, Denver, CO 80203. 27pp.

Esperance, J.F. 2000. USFWS Fish and Wildlife Biologist, Trip report - Environmental Site Assessment, Level 1 Survey Checklist, Monte Vista NWR.

Lewis, R.O. 1991. USFWS Regional Archaeologist. Trip report-cultural resource inventory Monte Vista NWR.

U.S. Bureau of the Census. 1997. Population Estimates program, Population Division.

USDA. Soil Conservation Service. 1980. Soil survey of Rio Grande County Area, CO.

USDI Bureau of Land Management. 1989. Draft San Luis resource management plan and environmental impact statement.

USFWS 1987. Updated 1994, 1998. North American Waterfowl Management Plan.

USFWS 1983. *Haliaeetus leucocephalus* (Bald Eagle) Recovery Plan (Northern States).

USFWS 1994. Revised. *Grus americana* (Whooping Crane) Recovery Plan.

USFWS 1993. Nongame Bird Management Plan for Region 6.

USFWS, CDOW, BLM 1995. San Luis Valley Waterbird Plan.

Pacific Flyway Study Committee and Central Flyway Technical Committee
Revised 1998. Management Plan of the Pacific and Central Flyway for the Rocky Mountain Population of the Greater Sandhill Cranes.

Appendix A. Wildlife Species of Monte Vista NWR Complex

Birds

Loons

Arctic Loon	<i>Gavia arctica</i>
Common Loon	<i>Gavia immer</i>

Grebes

Pied-billed Grebe	<i>Podilymbus podiceps</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Western Grebe	<i>Aechmophorus occidentalis</i>

Pelicans

American White Pelican	<i>Pelecanus erythrorhynchos</i>
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Cormorant

Double-crested Cormorant	<i>Phalacrocorax auritus</i>
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Bitterns, Herons

American Bittern	<i>Botaurus lentiginosus</i>
Least Bittern	<i>Ixobrychus exilis</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Snowy Egret	<i>Egretta thula</i>
Little Blue Heron	<i>Egretta caerulea</i>
Cattle Egret	<i>Bubulcus ibis</i>
Green Heron	<i>Butorides virescens</i>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>

Ibis, Stork

White-faced Ibis	<i>Plegadis chihi</i>
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Vultures

Turkey Vulture	<i>Cathartes aura</i>
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Geese

Greater White-fronted Goose	<i>Anser albifrons</i>
Snow Goose	<i>Chen caerulescens</i>
Ross' Goose	<i>Chen rossii</i>
Canada Goose	<i>Branta canadensis</i>

Swans

Tundra Swan	<i>Cygnus columbianus</i>
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Ducks

Wood Duck	<i>Aix sponsa</i>
Gadwall	<i>Anas strepera</i>
American Wigeon	<i>Anas americana</i>
Mallard	<i>Anas platyrhynchos</i>
Blue-winged Teal	<i>Anas discors</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acuta</i>
Green-winged Teal	<i>Anas crecca</i>
Canvasback	<i>Aythya valisineria</i>
Redhead	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Greater Scaup	<i>Aythya marila</i>
Lesser Scaup	<i>Aythya affinis</i>
Bufflehead	<i>Bucephala albeola</i>
Common Goldeneye	<i>Bucephala clangula</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>

Hawks, Kites, Eagles

Osprey
Bald Eagle
Northern Harrier
Sharp-shinned Hawk
Cooper's Hawk
Northern Goshawk
Swainson's Hawk
Red-tailed Hawk
Ferruginous Hawk
Rough-legged Hawk
Golden Eagle

<i>Pandion haliaetus</i>
<i>Haliaeetus leucocephalus</i>
<i>Circus cyaneus</i>
<i>Accipiter striatus</i>
<i>Accipiter cooperii</i>
<i>Accipiter gentilis</i>
<i>Buteo swainsoni</i>
<i>Buteo jamaicensis</i>
<i>Buteo regalis</i>
<i>Buteo lagopus</i>
<i>Aquila chrysaetos</i>

Falcons

American Kestrel	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Prairie Falcon	<i>Falco mexicanus</i>

Gallinaceous Birds

Ring-necked Pheasant	Introduced	<i>Phasianus colchicus</i>
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Rails, Gallinules

Virginia Rail	<i>Rallus limicola</i>
Sora	<i>Porzana carolina</i>
Purple Gallinule	<i>Porphyryula martinica</i>
American Coot	<i>Fulica americana</i>

Cranes

Sandhill Crane	<i>Grus canadensis</i>
Whooping Crane	<i>Grus americana</i>

Plovers

Black-bellied Plover	<i>Pluvialis squatarola</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Killdeer	<i>Charadrius vociferus</i>

Stilt, Avocet

Black-necked Stilt	<i>Himantopus mexicanus</i>
American Avocet	<i>Recurvirostra americana</i>

Sandpipers

Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Whimbrel	<i>Numenius phaeopus</i>
Long-billed Curlew	<i>Numenius americanus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Sanderling	<i>Calidris alba</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Common Snipe	<i>Gallinago gallinago</i>

Phalaropes

Wilson's Phalarope	<i>Phalaropus tricolor</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>

Gulls

Franklin's Gull	<i>Larus pipixcan</i>
Bonaparte's Gull	<i>Larus philadelphia</i>
Ring-billed Gull	<i>Larus delawarensis</i>

Terns

Caspian Tern	<i>Sterna caspia</i>
Common Tern	<i>Sterna hirundo</i>
Forster's Tern	<i>Sterna forsteri</i>
Least Tern	<i>Sterna antillarum</i>
Black Tern	<i>Chlidonias niger</i>

Pigeons, Doves, Parakeet

Rock Dove	Introduced	<i>Columba livia</i>
Band-tailed Pigeon		<i>Columba fasciata</i>
Mourning Dove		<i>Zenaida macroura</i>

Owls

Barn Owl	<i>Tyto alba</i>
Great Horned Owl	<i>Bubo virginianus</i>
Burrowing Owl	<i>Athene cunicularia</i>
Long-eared Owl	<i>Asio otus</i>
Short-eared Owl	<i>Asio flammeus</i>

Goatsuckers

Common Nighthawk	<i>Chordeiles minor</i>
Common Poorwill	<i>Phalaenoptilus nuttallii</i>

Swifts

White-throated Swift	<i>Aeronautes saxatalis</i>
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Hummingbirds

Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Broad-tailed Hummingbird	<i>Selasphorus platycircus</i>
Rufous Hummingbird	<i>Selasphorus rufus</i>

Kingfisher

Belted Kingfisher	<i>Ceryle alcyon</i>
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Woodpeckers

Lewis' Woodpecker	<i>Melanerpes lewis</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Northern Flicker	<i>Colaptes auratus</i>

Flycatchers

Olive-sided Flycatcher	<i>Contopus cooperi</i>
Western Wood-Pewee	<i>Contopus sordidulus</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Gray Flycatcher	<i>Empidonax wrightii</i>
Say's Phoebe	<i>Sayornis saya</i>
Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>
Cassin's Kingbird	<i>Tyrannus vociferans</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>

Shrikes

Loggerhead Shrike	<i>Lanius ludovicianus</i>
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Vireo

Warbling Vireo	<i>Vireo gilvus</i>
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Jays, Magpies, Crows, Ravens

Black-billed Magpie	<i>Pica pica</i>
American Crow	<i>Corvus brachyrhynchos</i>
Common Raven	<i>Corvus corax</i>

Lark

Horned Lark	<i>Eremophila alpestris</i>
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Swallows

Purple Martin	<i>Progne subis</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Violet-green Swallow	<i>Tachycineta thalassina</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Bank Swallow	<i>Riparia riparia</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Barn Swallow	<i>Hirundo rustica</i>

Chickadees, Titmice, Verdin, Bushtit

Black-capped Chickadee	<i>Poecile atricapillus</i>
Mountain Chickadee	<i>Poecile gambeli</i>

Nuthatches

White-breasted Nuthatch	<i>Sitta carolinensis</i>
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Wrens, Dipper

Rock Wren	<i>Salpinctes obsoletus</i>
House Wren	<i>Troglodytes aedon</i>
Marsh Wren	<i>Cistothorus palustris</i>

Kinglets

Golden-crowned Kinglet	<i>Regulus satrapa</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>

Thrushes, Bluebirds

Western Bluebird	<i>Sialia mexicana</i>
Mountain Bluebird	<i>Sialia currucoides</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
American Robin	<i>Turdus migratorius</i>

Thrashers

Northern Mockingbird	<i>Mimus polyglottos</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>

Starling

European Starling	<i>Sturnus vulgaris</i>
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Pipits

American (Water) Pipit	<i>Anthus rubescens</i>
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Warblers

Yellow Warbler	<i>Dendroica petechia</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Townsend's Warbler	<i>Dendroica townsendi</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>
MacGillivray's Warbler	<i>Oporornis tolmiei</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>

Tanagers

Western Tanager	<i>Piranga ludoviciana</i>
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Towhee, Sparrows

Green-tailed Towhee	<i>Pipilo chlorurus</i>
Cassin's Sparrow	<i>Aimophila cassinii</i>
American Tree Sparrow	<i>Spizella arborea</i>
Chipping Sparrow	<i>Spizella passerina</i>
Brewer's Sparrow	<i>Spizella breweri</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Black-throated Sparrow	<i>Amphispiza bilineata</i>
Sage Sparrow	<i>Amphispiza belli</i>
Lark Bunting	<i>Calamospiza melanocorys</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Song Sparrow	<i>Melospiza melodia</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Lapland Longspur	<i>Calcarius lapponicus</i>

Grosbeaks, Buntings

Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>
Blue Grosbeak	<i>Guiraca caerulea</i>
Indigo Bunting	<i>Passerina cyanea</i>

Blackbirds, Orioles

Bobolink	<i>Dolichonyx oryzivorus</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Great-tailed Grackle	<i>Quiscalus mexicanus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Bullock's Oriole	<i>Icterus bullockii</i>

Finches

Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>
Cassin's Finch	<i>Carpodacus cassinii</i>
House Finch	<i>Carpodacus mexicanus</i>
Pine Siskin	<i>Carduelis pinus</i>
Lesser Goldfinch	<i>Carduelis psaltria</i>
American Goldfinch	<i>Carduelis tristis</i>

Old World Sparrow

House Sparrow	Introduced	<i>Passer domesticus</i>
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Mammals

Virginia Opossum	<i>Didelphis virginiana</i>
Masked Shrew	<i>Sorex cinereus</i>
Dusky Shrew	<i>Sorex monticolus</i>
Water Shrew	<i>Sorex palustris</i>
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>
Long-eared Myotis	<i>Myotis evotis</i>
Little brown Myotis	<i>Myotis lucifugus</i>
Yuma Myotis	<i>Myotis yumanensis</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Silver-haired Bat	<i>Lasionycteris noctivagans</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Townsend's Big-eared Bat	<i>Plecotus townsendii</i>
Desert Cottontail	<i>Sylvilagus audubonii</i>
Mountain Cottontail	<i>Sylvilagus nuttallii</i>
Black-tailed Jackrabbit	<i>Lepus californicus</i>
White-tailed Jackrabbit	<i>Lepus townsendii</i>
Least Chipmunk	<i>Tamias minimus</i>
Yellow-bellied Marmot	<i>Marmota flaviventris</i>
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>
White-tailed Prairie Dog	<i>Cynomys leucurus</i>
Botta's Pocket Gopher	<i>Thomomys bottae</i>
Northern Pocket Gopher	<i>Thomomys talpoides</i>
Olive-backed Pocket Mouse	<i>Perognathus fasciatus</i>
Plains Pocket Mouse	<i>Perognathus flavescens</i>
Silky Pocket Mouse	<i>Perognathus flavus</i>
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>
American Beaver	<i>Castor canadensis</i>
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
Deer Mouse	<i>Peromyscus maniculatis</i>
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>
House Mouse	<i>Mus musculus</i>
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>
Heather Vole	<i>Phenacomys intermedius</i>
Long-tailed Vole	<i>Microtus longicaudus</i>
Montane Vole	<i>Microtus montanus</i>
Meadow Vole	<i>Mecrotus pennsylvanicus</i>
Western Jumping Mouse	<i>Zapus princeps</i>
Common Porcupine	<i>Erethizon dorsatum</i>
Coyote	<i>Canis latrans</i>
Red Fox	<i>Vulpes vulpes</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Black Bear	<i>Ursus americanus</i>
Common Raccoon	<i>Procyon lotor</i>

Long-tailed Weasel
Mink
American Badger
Western Spotted Skunk
Striped Skunk
Mountain Lion
Bobcat
American Elk
Mule Deer
White-tailed Deer
Pronghorn

Mustela frenata
Mustela vison
Taxidea taxus
Spilogale gracilis
Mephitis mephitis
Felis concolor
Lynx rufus
Cervus elaphus
Odocoileus hemionus
Odocoileus virginianus
Antilocapra americana

Reptiles

Snapping Turtle
Short-horned Lizard
Eastern Fence Lizard
Many-lined Skink
Milk Snake
Bullsnake
Western Terrestrial Garter Snake
Western Rattlesnake

Chelydra serpentina
Phrynosoma douglassii
Sceloporous undulatus
Eumeces multivirgatus
Lampropeltis triangulum
Pituophis melnoleucus
Thamnophis elegans
Crotalus viridis

Amphibians

Tiger Salamander
Plains Spadefoot
Western Frogs
Great Plains Toad
Woodhouse's Toad
Striped Chorus Frog
Bullfrog
Northern Leopard Frog

Ambystoma tigrinum
Scaphiopus bombifrons
Bufo boreas
Bufo cognatus
Bufo woodhousii
Pseudacris triseriata
Rana catesbeiana
Rana pipiens

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For Refuge Information
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